PILOT STUDY OF VOCATIONAL-TECHNICAL EDUCATION

IN

TWELVE NORTH IOWA COUNTIES

PILOT STUDY OF VOCATIONAL-TECHNICAL EDUCATION

IN

TWELVE NORTH IOWA COUNTIES

Preliminary Report of

Principal Findings, Discussion and Summary

Prepared by

Trevor G. Howe

Education Department

Iowa State University

Ames, Iowa

March 1963

TABLE OF CONTENTS

LIST OF TABLES

ACKNOWLEDGEMENT

The author wishes to express his appreciation and thanks to the respondents and the many others who have helped to make this study possible.

Those directly responsible for the success of the survey were the county superintendents and county extension directors recognized below:

County	County Superintendent[a]	County Extension Director[a]
Bremer	Robert Gaard[b]	Gene Vincent
Butler	Kenneth R. Rowley	Kay A. Connelly
Cerro Gordo	M. C. Martin	Spencer Williams
Chickasaw	A. S. Morse	Walther Hungerford
Floyd	Fannie G. Howell[c]	M. L. Kruse[c]
Franklin	Arthur J. Renaud	R. Pearl Kelsey
Hancock	Charles Whitney	Paul Henderson
Howard	Abner A. Hendrickson[c]	John Patterson[c]
Mitchell	Ira E. Larson[c,d]	Edgar Dorow[c]
Winnebago	S. T. Tweed	Richard W. Anderson
Worth	Glenn Cleveland	William H. St. Clair
Wright	Claude W. Sankey	Aaron R. Bowman

[a]For school year 1960-61.

[b]Deceased.

[c]Initial Study Committee.

[d]Chairman.

INTRODUCTION

This study was the outgrowth of the concern of the County Superintendents and Extension Directors in twelve north Iowa counties about the type of educational opportunities being provided for the youth of their counties. The counties cooperating in the study were Bremer, Butler, Cerro Gordo, Chickasaw, Floyd, Franklin, Hancock, Howard, Mitchell, Winnebago, Worth, and Wright.

Initial steps were taken in 1959, in the form of meetings and planning by Mr. Ira E. Larsen, County Superintendent of Schools from Mitchell County. He asked for assistance and advice which he received from various members of the staff in the Department of Education at Iowa State University and the State Department of Public Instruction. Those involved in the planning and consulting phase made a trip to Austin, Minnesota and visited the vocational and technical schools. The following day the same group met at Osage, Iowa and this meeting resulted in the formation of a study group.

By the spring of 1961, the study group was convinced of the need for additional information concerning the youth of these counties and their educational and occupational progress. The pilot study was then organized through the cooperation of the State Department of Public Instruction, the Agricultural Experiment Station and the Education Department of Iowa State University, the County Superintendent's Office, County Extension Service and the local schools.

Purposes or Objectives

The objectives of this study were as follows:

1. To serve as a pilot study to determine the need for and interest in vocational-technical education.
2. To explore the extent to which students would be willing to participate in area vocational programs, distance they would be willing to travel to attend and the share of the cost they would be willing to bear. (tuition, travel, etc.)
3. To obtain current opinions from former secondary school students in a predominantly rural area of Iowa, concerning the adequacy of their high school program.
4. To determine the preparatory vocational programs needed in secondary schools, and the technical training needed by high school graduates.
5. To gather data concerning the drop-outs and to determine their need and desire for training.
6. To determine the post high school educational needs of former high school students (adults) who are able to meet the qualifications for admission to the vocation-technical programs.

7. To gather and analyze the student's job history after high school in regard to such items as the number of job changes, number of jobs held (full or part-time) placement agencies utilized, job satisfaction, income level, etc.
8. To determine migration tendencies, changes of residence, natural commuting pattern, etc.
9. To classify the present occupation using a three digit census occupation code.

These objectives were considered and stated early in the planning phase. They proved helpful to guide and limit the study. The successful realization of the above stated objectives will materially aid in planning improved programs of education for the high school students in the area studied.

METHOD OF PROCEDURE

Design

Population sampled

The high schools of twelve north Iowa counties were included in the pilot study. Every high school within the counties participated for a total of eighty-eight schools. Preliminary information was tabled showing ninth grade enrollment totals by county for the school years 1948-1958.

After careful consideration, ninth grade lists for the school years 1952-53, 1954-55, and 1956-57 were used. The number of students in the population for these three years was approximately 10,000 students. The students who had completed their high school education would have been out of school for five, three and one years.

Sample size

The size of the sample was considered in the design. This important decision was not an easy one to make. Small samples have sometimes been too inaccurate to be useful. In contrast, too large a sample can be costly in time, effort and money expended for the results obtained.

A rational approach, to the problem of the choice of sample size involved several factors. The determination of the size of the initial sample was influenced by the expected number of returns from the mailed questionnaire. A statement of the precision desired or how much error should be tolerated was another factor.

Cochran's method (5, pp. 51-53) for sampling proportions, was used as a rough estimate to determine the sample size of a dichotomous variable. For purposes of this study, a five percent margin of error was used with 95 percent as the confidence level.

Selecting the sample

The systematic method of sampling was used. Based on the sample size determined in the previous computation, the decision was made to include approximately 25 percent of the population.

Each school prepared an alphabetized list of students with their last name first, boys and girls were listed together. The table of random numbers was used to determine the starting point from one to four for each of the 264 lists. Then every fourth name of the list from the starting point was starred with a red pencil and a four digit student number was assigned. A sample of 2561 students was selected by this procedure.

Code number

A code number consisting of four digits was used to identify each list. The county was identified by the first two digits in the same manner as the number used to identify the county on the auto license plates. The third number identifies the school within the county which the student attended during ninth grade. The fourth number identifies the year, one refers to 1952, two to 1954, and three to 1956.

Example:	17	-	1	-	1
	Cerro Gordo		Roosevelt Jr. Hi.		1952-53

Obtaining current addresses

One of the biggest and most essential tasks was to obtain current addresses for the students included in the sample. The approach used was to type lists, in duplicate, using the assigned code number to identify the county, school and year. A form developed had columns provided to indicate the student number and student name (i.e. the name of the students selected in the sample were previously starred with a red pencil and a four digit number written beside each name.) Both of the last names (married and maiden) were used for married girls.

Two additional columns were provided on the form to indicate the current street and post office address. The local schools cooperated by obtaining the students current address.

Questionnaire

Construction

The objectives or purposes of the study were clearly in mind as the questionnaire was constructed. The need for motivating the respondents was recognized and considered in the planning. Some of the principal factors considered were the appearance, length, ease of checking, clarity and purpose of the questionnaire (23). Many other factors influenced the percent of returns.

The ease with which the answer on the questionnaire could be coded for punching on I.B.M. cards was carefully planned. Open-end (free response) questions should be avoided as they were hard to code. Questions with numbered items from which one answer was selected (closed questions) were preferred for ease of coding, editing, punching, tabulating, and summarizing.

Tryout

The printed questionnaire used in the survey was the cumulative effort of a number of people who pooled their ideas and made suggestions. Many drafts of the questionnaire were written. A pretest or tryout of the questionnaire was made. Copies of the dittoed questionnaire were given to sixty-three members of the freshman class in Industrial Education at Iowa State University. Women employed in the coding room of the statistical laboratory at Iowa State then coded the questionnaires. Questions that were considered as "not clear", were then revised or deleted. Many other helpful suggestions were obtained. The questionnaire was developed in final form and printed.

Publicity

Local news releases were made through the newspapers, radio and television stations which aided in acquainting the public with the survey. Previous knowledge of the forthcoming questionnaire prepared the respondent as to the purpose, need and details. The end result was reflected by the increased number of returns.

Cover Letter

The cover letter was an essential part of the survey. It was designed to briefly, quickly, and courteously convey a message. An interesting appeal was presented giving the purpose, importance and a convincing argument to encourage the respondent to read further, check and return the questionnaire.

Mailing of the Questionnaires

The mailing of cover letters and questionnaires was done through the county superintendents' office. Addresses were obtained for 2440 students included in the sample. The prepared lists giving the code number, student number, names and addresses, simplified the task of mailing. A number ten envelope with eight cents postage attached was addressed. The corresponding code number and student number was written on the upper left corner of the questionnaire. The cover letter, questionnaire and return envelope were folded, assembled and prepared for mailing.

Returned Questionnaires

Questionnaires were returned through the county superintendents' office. As they were received a check mark was made by the name on the mailing list. An accurate record was maintained to be used later for a follow-up card or letter.

One week after the initial mailing 614 or twenty-five percent of the questionnaires had been returned. Two weeks later 1,306 or fifty-four percent had been returned. Those received during the period were marked return number one.

Follow-up

A follow-up letter was mailed to the nonrespondents about a week or ten days after the first mailing. The percentage of returns was increased an additional sixteen percent, to seventy percent. In some counties a

second reminder in the form of a post card was used. Questionnaires returned during the three week period after the mailing of a follow-up letter were marked return number two to identify them for later comparison.

A four week period prior to the cut-off date of July 1, 1961, was used to personally contact a randomly selected number of nonrespondents. A re-mailing of the questionnaire was used in some counties. This last stage used for vigorous follow-up resulted in five percent additional returns for a total of seventy-five percent. These were marked return number three. The use of a weighting factor was planned in analyzing their response.

Processing the Questionnaires

The questionnaires were boxed and sent from the county superintendent's office to the Education Department at Iowa State University. The information from the questionnaires was coded, then it was punched and verified on International Business Machines (I.B.M.) cards at the statistical laboratory.

I.B.M. machines were used for sorting, tabulating and summarizing.

FINDINGS

The principal findings were reported in a sequence similar to the order in which the questions were asked. They begin with general characteristics of the respondents and proceed to the more specific items such as; high school, drop-outs, high school courses, vocational counseling, employment, vocational and technical courses and expected participation in vocational-technical programs.

The questionnaires were mailed to 2440 former students. The data of Table 1 indicates the sex distribution by year for the respondents. A total of 1836 persons returned the questionnaires or 75 percent of the original mailing. It was particularly interesting to note the equitable distribution of the sample by sex and also for each of the three different years. The sex distribution for the total sample was almost equally divided, 51 percent male and 49 percent female.

The age of the respondents at the time of the survey was considered. The distribution of the respondents by age and sex was almost equally divided between the males and females and among the age in years as indicated by the frequency count and percent, with the majority of ages reported ranging from 18 to 24 years.

Another factor considered was the marital status of the respondents by sex. At the time of the survey, 28 percent, or 259 males and 48 percent, or 437 females were married. Considering the total sample, 38 percent or 696 of the respondents were married.

Table 1. Sex distribution of respondents by year

Year	Male N	Male %	Female N	Female %	Total N	Total %
1952-53	290	50	285	50	575	100
1954-55	311	51	299	49	610	100
1956-57	331	51	320	49	651	100
Total	932	51%	904	49%	1836	100%

Table 2. Residence of respondents while attending high school

Residence	Male N	Male %	Female N	Female %	Total N	Total %
Farm	454	48.7	437	48.4	891	48.6
Town or City	425	45.6	424	46.9	849	46.2
Combination	51	5.5	41	4.5	92	5.0
No response	2	.2	2	.2	4	.2
Total	932	100.0	904	100.0	1836	100.0

Table 3. Farming status of parents, of students who lived on the farm while attending high school

Farming Status	Male N	Male %	Female N	Female %	Total N	Total %
Owner	294	64.8	300	68.6	594	66.7
Renter	160	35.2	137	31.4	297	33.3
Total	454	100.0	437	100.0	891	100.0

Table 4. Present residence of respondents in miles, from their home during high school

Miles	Male	Female	Total	%
Same	383	271	654	35.6
1-25	74	142	216	11.7
26-50	42	77	119	6.5
51-75	36	46	82	4.5
76-100	52	55	107	5.8
100 or more	100	133	233	12.7
Out of state	235	172	407	22.2
No response	10	8	18	1.0
Total	932	904	1836	100.0

Table 5. Reasons given by respondents for leaving home county

Reasons	Male		Female		Total	
	N	%	N	%	N	%
Obtain a better education	225	24.1	238	26.3	463	25.2
Marriage	13	1.4	206	22.8	219	11.9
Military orders	142	15.3	6	.7	148	8.1
Higher pay elsewhere	77	8.3	68	7.5	145	7.9
Kind of work was not available	62	6.7	63	7.0	125	6.8
No jobs available	52	5.6	51	5.6	103	5.6
Other	16	1.6	30	3.3	46	2.6
Did not leave home county	321	34.4	227	25.1	548	29.8
No response	24	2.6	15	1.7	39	2.1
Total	932	100.0	904	100.0	1836	100.0

Table 6. Methods used by respondents to obtain their present job

Methods	Male		Female		Total	
	N	%	N	%	N	%
Applied directly to employer	244	26.2	216	23.9	460	25.1
Relatives or friends	124	13.3	47	5.2	171	9.3
Military service	139	14.9	6	.7	145	7.9
School referral	20	2.2	38	4.2	58	3.2
Public employment service	19	2.1	40	4.4	59	3.2
Continuation of part-time job	45	4.8	7	.7	52	2.8
Self-employed	47	5.0	1	.1	48	2.6
Other	92	9.8	83	9.2	175	9.5
Student not employed	180	19.3	200	22.1	380	20.7
Married Homemakers	-	-	213	23.6	213	11.6
Not employed	9	1.0	29	3.2	38	2.1
No response	13	1.4	24	2.7	37	1.9
Total	932	100.0	904	100.0	1836	100.0

Table 7. Frequency count on the number of jobs held by respondents for three months or longer since leaving high school

Jobs	Years						Total	
	1952-53		1954-55		1956-57		N	%
	Male	Female	Male	Female	Male	Female		
1	74	94	100	107	147	132	654	35.6
2	99	81	88	77	94	58	497	27.1
3	90	59	87	47	29	9	321	17.5
4	6	10	6	6	2	0	30	1.6
5	7	4	2	1	0	0	14	.8
6	1	1	0	0	0	0	2	-
7	0	0	0	0	0	0	0	-
8	1	0	0	0	0	0	1	-
No response	12	36	28	61	59	121	317	17.3
Total	290	285	311	299	331	320	1836	99.9

Table 8. Last school grade completed by drop-outs

Grade	Male	Female	Total	
			N	%
8th.	9	5	14	9.3
9th.	15	6	21	13.9
10th.	27	22	49	32.4
11th.	25	42	67	44.4
Total	76	75	151	100.0

Table 9. Reasons drop-outs gave for leaving school

Reasons	Male		Female		Total	
	N	%	N	%	N	%
Did not like school	41	54.0	14	18.7	55	36.4
Marriage	4	5.3	51	68.0	55	36.4
Financial Reasons	15	19.7	4	5.3	19	12.6
Unhappy at home	8	10.5	3	4.0	11	7.3
Needed at home	5	6.6	0	-	5	3.3
Poor health	2	2.6	2	2.7	4	2.6
Low grades	1	1.3	0	-	1	.7
No response	0	-	1	1.3	1	.7
Total	76	100.0	75	100.0	151	100.0

Table 10. Number and percent of high school graduates and drop-outs in the sample by sex

	Male		Female		Total	
	N	%	N	%	N	%
Drop-outs	76	8.2	75	8.3	151	8.2
High school graduates	856	91.8	829	91.7	1685	91.8
Total	932	100.0	904	100.0	1836	100.0

Table 11. Median value ratings and median semesters enrolled in high school courses by males

Courses	Rank[a]	N[b]	Median	
			Value[c] rating	Semesters enrolled
Mathematics	1	896	3.645.	3.857
English	2	912	3.504	6.551
Science	3	892	3.144	3.790
Drivers Education	4	556	3.042	1.500
Industrial Arts	5	732	2.949	5.872
Bookkeeping	6	401	2.935	1.544
Sociology and Psychology	7	381	2.912	1.598
Foreign Language	8	110	2.737	2.429
History & Economics	9	894	2.691	3.688
Typing	10	739	2.669	1.599
Journalism	11	103	2.656	1.608
Geography	12	342	2.376	1.621
Art	13	120	1.900	1.776
Shorthand	14	16	1.833	1.643
Music	15	394	1.593	4.726

[a]Placed in rank order according to median value rating.

[b]Number of males rating the course.

[c]Based on a four point rating scale.

Table 12. Median value ratings and median semesters enrolled in high school courses by females

Courses	Rank[a]	N[b]	Median Value rating[c]	Median Semesters enrolled
English	1	887	3.792	6.817
Bookkeeping	2	567	3.713	1.530
Mathematics	3	875	3.303	2.944
Sociology and Psychology	4	418	3.250	1.588
Drivers Education	5	627	3.220	1.511
Typing	6	848	3.129	1.967
Science	7	873	2.811	3.253
History & Economics	8	881	2.732	4.000
Journalism	9	141	2.698	1.646
Foreign Lanugage	10	215	2.526	2.370
Geography	11	266	2.383	1.604
Shorthand	12	378	2.180	1.926
Music	13	671	1.939	6.594
Art	14	121	1.898	1.940
Industrial Arts	15	20	1.500	1.676

[a]Placed in rank order according to median value rating.

[b]Number of females rating the course.

[c]Based on a four point rating scale.

Table 13. Responses to the question, "Did your high school provide an opportunity for you to make an adequate study of vocations and the choice of one?"

	High School Graduates				Drop-outs				Total	
	Male		Female		Male		Female			
	N	%	N	%	N	%	N	%	N	%
Yes	291	34.0	403	48.6	16	21.0	32	42.7	742	40.4
No	556	65.0	414	49.9	55	72.3	40	53.3	1065	58.0
No response	9	1.0	12	1.5	5	6.6	3	4.0	29	1.6
Total	856	100.0	829	100.0	76	100.0	75	100.0	1836	100.0

Table 14. Responses to the question, "Did your high school provide a person trained in guidance and counseling to assist you in making a vocational choice.

	High School Graduates				Drop-outs				Total	
	Male		Female		Male		Female			
	N	%	N	%	N	%	N	%	N	%
Yes	368	43.0	368	44.4	22	29.0	35	46.7	793	43.2
No	478	55.8	453	54.6	47	61.8	36	48.0	1014	55.2
No response	10	1.2	8	1.0	7	9.2	4	5.3	29	1.6
Total	856	100.0	829	100.0	76	100.0	75	100.0	1836	100.0

Table 15. Earliest grade in high school in which students were given guidance and counseling to assist them in making a vocational choice

	High School Graduates				Drop-outs					
	Male		Female		Male		Female		Total	
	N	%	N	%	N	%	N	%	N	%
9th.	198	23.1	223	26.9	20	26.3	25	33.3	466	25.4
10th.	75	8.8	67	8.1	3	3.9	5	6.6	150	8.2
11th.	89	10.4	116	14.0	4	5.3	9	12.0	218	11.9
12th.	110	12.9	89	10.7	1	1.3	1	1.3	201	10.9
None given	375	43.8	323	39.0	41	54.0	32	42.6	771	42.0
No response	9	1.0	11	1.3	7	9.2	3	4.0	30	1.6
Total	856	100.0	829	100.0	76	100.0	75	100.0	1836	100.0

Table 16. Responses as to whether a definite vocational choice was made by students while enrolled in high school

	High School Graduates				Drop-outs					
	Male		Female		Male		Female		Total	
	N	%	N	%	N	%	N	%	N	%
Yes	248	29.0	423	51.0	10	13.2	23	30.7	704	38.3
No	601	70.2	397	47.9	62	81.6	52	69.3	1112	60.6
No response	7	.8	9	1.1	4	5.2	0	-	20	1.1
Total	856	100.0	829	100.0	76	100.0	75	100.0	1836	100.0

Table 17. What each respondent did principally the first year after leaving high school by sex

	Male (932)[a]	Female (904)	Total (1836)
Continued formal education:			
Four yr. college	25.97[b]	20.91	23.47
Junior college	9.44	8.52	8.99
Trade, business	5.47	12.39	8.88
Nurses training	-	6.64	3.27
Employed as follows:			
Skilled trade	2.68	1.88	2.29
Farming	13.41	-	6.81
Unskilled	23.50	26.66	25.05
Homemaker	-	11.72	5.77
Homemaking and employment	-	7.19	3.54
Military Service	17.60	.66	9.26
Unemployed	1.50	3.10	2.29
No response	.43	.33	.38
Total	100.00	100.00	100.00

[a]Totals on which percents were computed.

[b]Percents given.

Table 18. What each male did principally the first year after leaving high school,, farm reared vs non farm

	Farm		Non farm		Total	
	N	%	N	%	N	%
Continued formal education:						
Four-year college	104	22.9	130	30.6	234	26.6
Junior college	25	5.5	59	13.9	84	9.6
Trade, Bus. or Voc.	28	6.2	22	5.2	50	5.7
Employed as follows:						
Skilled trade	8	1.8	17	4.0	25	2.8
Unskilled	102	22.5	100	23.5	202	23.0
Farming	114	25.1	4	.9	118	13.4
Military service	66	14.5	83	19.5	149	17.0
Unemployed	6	1.3	8	1.9	14	1.6
No response	1	.2	2	.5	3	.3
Total	454	100.0	425	100.0	879	100.0

Table 19. What each farm reared male did principally the first year after leaving high school, parental farm owner vs renter

	Owner		Renter		Total	
	N	%	N	%	N	%
Continued formal education:						
Four-year college	79	26.9	25	15.6	104	22.9
Junior college	18	6.1	7	4.4	25	5.5
Trade, Bus. or Voc.	16	5.4	12	7.5	28	6.2
Employed as follows:						
Skilled trade	4	1.4	4	2.5	8	1.8
Unskilled	53	18.0	49	30.6	102	22.5
Farming	80	27.2	34	21.3	114	25.1
Military service	41	14.0	25	15.6	66	14.5
Unemployed	3	1.0	3	1.9	6	1.3
No response	-	-	1	.6	1	.2
Total	294	100.0	160	100.0	454	100.0

Table 20. What each female did principally the first year after leaving high school, farm reared vs non farm

	Farm		Non farm		Total	
	N	%	N	%	N	%
Continued formal education:						
Four-year college	77	17.6	110	25.9	187	21.7
Junior college	33	7.6	40	9.4	73	8.5
Trade, Bus. or Voc.	61	14.0	44	10.4	105	12.2
Nurses training	26	5.9	33	7.8	59	6.8
Employed as follows:						
Skilled trade	8	1.8	7	1.7	15	1.7
Unskilled	131	30.0	92	21.6	223	25.9
Homemaker	46	10.5	54	12.7	100	11.6
Homemaker and employed	27	6.2	35	8.3	62	7.2
Military service	3	.7	2	.5	5	.6
Unemployed	21	4.8	7	1.7	28	3.3
No response	4	.9	-	-	4	.5
Total	437	100.0	424	100.0	861	100.0

Table 21. What each farm reared female did principally the first year after leaving high school, parental farm owner vs renter

	Owner		Renter		Total	
	N	%	N	%	N	%
Continued formal education:						
Four-year college	65	21.7	12	8.8	77	17.6
Junior college	27	9.0	6	4.4	33	7.6
Trade, Bus. or Voc.	37	12.3	24	17.5	61	14.0
Nurses Training	14	4.7	12	8.8	26	5.9
Employed as follows:						
Skilled trade	8	2.7	-	-	8	1.8
Unskilled	90	30.0	41	29.9	131	30.0
Homemaker	24	8.0	22	16.0	46	10.5
Homemaker and employed	16	5.3	11	8.0	27	6.2
Military service	3	1.0	-	-	3	.7
Unemployed	15	5.0	6	4.4	21	4.8
No response	1	.3	3	2.2	4	.9
Total	300	100.0	137	100.0	437	100.0

Table 22. Present occupation or principal employment of respondents during the past year by sex

Occupation	Male		Female		Total	
	N	%	N	%	N	%
Professional & Technical	42	4.5	123	13.6	165	9.0
Farmers	118	12.7	-	-	118	6.4
Managers	13	1.4	8	.9	21	1.1
Clerical	38	4.1	211	23.3	249	13.6
Sales	21	2.3	14	1.5	35	1.9
Craftsmen	80	8.6	3	.3	83	4.5
Operatives	88	9.4	8	.9	96	5.2
Service	8	..9	49	5.4	57	3.1
Farm Laborers	9	1.0	-	-	9	.5
Laborers	72	7.7	10	1.1	82	4.5
Unemployed	6	.6	8	.9	14	.8
Military Service	167	17.9	6	.7	173	9.4
Students:						
Four yr. college	192	20.6	112	12.4	304	16.6
Two yr. college	42	4.5	26	2.9	68	3.7
Trade, business or Vocational school	36	3.8	45	5.0	81	4.4
Homemaking	-	--	281	31.1	281	15.3
Total	932	100.0	904	100.0	1836	100.0

Table 23. Vocational courses respondents would have taken had they been offered in high school

Vocational Area	Male (932) N	Male (932) %	Female (904) N	Female (904) %	Total (1836) N	Total (1836) %
Business Education	88	9.4	137	15.2	225	12.3
Distributive Education	124	13.3	77	8.5	201	10.9
Vocational Agriculture	54	5.8	-	-	54	2.9
Home Economics	-	-	56	6.2	56	3.1

Table 24. Vocational trade and industrial courses high school students would have taken had they been offered in high school

Course[a]	Male (932) N	Male (932) %	Female (904) N	Female (904) %	Total (1836) N	Total (1836) %
Cooperative Program	122	13.1	51	5.6	173	9.4
Cabinet Making & Millwork	85	9.1	26	2.9	111	6.0
Machine Shop	154	16.5	23	2.5	177	9.6
Auto Mechanics	621	66.6	24	2.6	645	35.1
Drafting	429	46.0	35	3.9	464	25.3
Electricity	582	62.4	48	5.3	630	34.3
Printing	124	13.3	135	14.9	259	14.1
Sheet Metal	317	34.0	2	.2	319	17.4
Welding	573	61.5	5	.6	578	31.5

[a]Considered independently – one at a time

Table 25. Frequency distribution of males for semesters of vocational courses taken in high school

Vocational Area	Semesters 1-2	3-4	5-6	7-8	Total (932) N	%
Business Education	123	32	9	2	166	17.8
Distributive Education	26	2	-	1	29	3.1
Vocational Agriculture	99	85	44	95	323	34.7

Table 26. Frequency distribution of females for semesters of vocational courses taken in high school

Vocational Area	Semesters 1-2	3-4	5-6	7-8	Total (904) N	%
Business Education	123	128	61	51	363	40.2
Distributive Education	51	2	1	-	54	6.0
Home Economics	237	293	94	28	652	72.1

Table 27. Distribution of students who took vocational trade and industrial courses

Vocational Area	Male (932) N	%	Female (904) N	%	Total (1836) N	%
Cooperative Training	45	4.8	30	3.3	74	4.0
Cabinet Making & Millwork	15	1.6	-	-	15	8.2
Machine Shop	13	1.4	-	-	13	7.1
Total	73	7.8	30	3.3	102	5.6

Table 28. Vocational courses that adults would take now if offered

Vocational Area[a]	Male		Female		Total	
	N	%	N	%	N	%
Voc. Business Education	21	2.2	129	14.2	150	8.2
Voc. Distributive Education	4	.4	7	.8	11	.6
Voc. Agriculture	16	1.7	0	-	16	.9
Voc. Home Economics	0	-	38	4.2	38	2.1
T & I Coop.	2	.2	0	-	2	.1
Cabinet Making	9	1.0	0	-	9	.5
Machine Shop	27	2.9	0	-	27	1.5
Auto Mech.	132	14.2	5	.6	137	7.4
Drafting	61	6.6	5	.6	66	3.6
Electricity	78	8.4	5	.6	83	4.5
Printing	16	1.7	22	2.4	38	2.1
Sheet Metal	7	.7	1	.1	8	.4
Welding	70	7.5	1	.1	71	3.8
Interior	3	.3	6	.7	9	.5
No response	486	52.2	685	75.7	1171	63.8
Total	932	100.0	904	100.0	1836	100.0

[a]Mutually exclusive - only one choice possible.

Table 29. Technical courses former students would have taken during high school if offered

Technical Course[a]	Male (932) N	%	Female (904) N	%	Total (1836) N	%
Aviation	288	30.9	10	1.1	298	16.2
Air conditioning, heating	169	18.1	13	1.4	182	9.9
Chemical	166	17.8	100	11.1	266	14.5
Civil	381	40.9	23	2.5	404	22.0
Diesel	264	39.1	3	.3	367	20.0
Electrical	381	40.9	19	2.1	400	21.8
Electronics	289	31.0	9	1.0	298	16.2
Industrial	191	20.5	60	6.6	251	13.7
Instrumentation	172	18.5	14	1.6	186	10.1
Mechanical	309	33.2	11	1.2	320	17.4
Metallurgical	139	14.9	16	1.8	155	8.4

[a]Considered independently - one at a time.

Table 30. Preference of time of offering technical courses for adults

Time	Male N	%	Female N	%	Total N	%
Evenings	358	67.4	62	63.9	420	66.9
Part-Time Day	128	24.1	30	30.9	158	25.2
Full-Time Day	45	8.5	5	5.2	50	7.9
Total	531	100.0	97	100.0	628	100.0

Table 31. Technical courses adults would take now if offered as a two year post-high school course

Technical Course[a]	Male (932) N	%	Female (904) N	%	Total (1836) N	%
Aviation	170	18.2	8	.9	178	9.7
Air conditioning, heating	127	13.6	10	1.1	137	7.5
Chemical	103	11.1	51	5.6	154	8.4
Civil	243	26.1	20	2.2	263	14.3
Diesel	280	30.0	5	.6	285	15.5
Electrical	282	30.3	17	1.9	299	16.3
Electronics	217	23.3	12	1.3	229	12.5
Industrial	137	14.7	46	5.1	183	10.0
Instrumentation	127	13.6	10	1.1	137	7.5
Mechanical	216	23.2	7	.8	223	12.1
Metallurgical	99	10.6	10	1.1	109	5.9

[a]Considered independently - one at a time

Table 32. Respondents desire to enroll in a technical, trade or vocational training program if it had been offered during their high school enrollment under various conditions

Conditions courses are offered	Male		Female		Total		
	Yes	No	Yes	No	Yes	No	% Yes
At high school attended	677	252	597	292	1274	544	70.1
At nearby center 1/2 days. Transportation furnished	587	335	573	322	1160	657	63.8
At center 30-60 miles Full-time, tuition paid Other costs paid by the student	410	498	391	483	801	981	44.9
At center 30-60 miles Full-time. All costs paid by the student	114	737	91	815	205	1552	11.7

Table 33. Responses of former students indicating desire to enroll in a technical, trade or vocational training after graduation for a period of one-half to two years, at a center not over 30-60 miles from home under two conditions

Conditions offered	Male		Female		Total		
	Yes	No	Yes	No	Yes	No	% Yes
Tuition paid by school district, other costs by the student	509	391	501	373	1010	764	56.9
All cost paid by the student	254	590	216	605	470	1195	28.2

DISCUSSION

The response by 75 percent of the former students surveyed was certainly gratifying. The excellent help and cooperation of the educators in each of the counties and schools helped to make this survey a success. The development of the study reflected the keen interest for improving and enriching the educational programs for the schools of that area.

Several important factors were highlighted during the investigation. The most important of these will be discussed in the paragraphs that follow.

Iowa's total population was enumerated in 1960 as 2,757,537 persons, a 5.2 percent gain during the ten year period. During the 1950-60 decade, the decrease in rural population was 5.3 percent. Three population factors were reviewed: the high birthrate during the 1940's and 1950's; Iowa's low death rate (increasing number in older age groups); and out-migration of the young productive age groups between 15 and 34 years, the highest rate being those between 25 and 34 years of age. Iowa had a net out-migration of 229 thousand persons in the ten year period, (?2).

The present study indicated that 44.8 percent of the respondents were still living in the same county as the one in which they lived during their last year in high school. Another 33 percent had moved out of the county but were still living within the state. Only 22.2 percent of the respondents had moved out of state. Over one-half of the males were still living in the same county and the others were still living relatively near. The same situation described the females except that

marriage had become a factor in change of residence.

The place of residence during the four years of high school appeared to have a decided effect on the educational opportunities of the respondents. A study of what each respondent did the first year after high school was most revealing. This difference in educational opportunity was most evident for males when approximately one-half of the nonfarm males continued their formal education as compared to 35 percent of the farm reared males.

For the sample of 1960 graduates from the twelve counties, 48.08 percent continued their formal education as compared with a state wide study (15) by the State Department of Public Instruction listing 46.9 percent. The detailed breakdown of the State Department Survey listed 35.35 percent enrolled in college, 11.6 percent enrolled in a trade, technical, apprenticeship, business, nurses training and other institutions as compared to the present study with 33.95 percent enrolled in college and 14.13 percent in the second category. Not quite twice as many had entered the military service as compared with the State Department Survey.

The farming status of the parent (owner versus renter) was considered for the farm reared youth. In every comparison the owner's son or daughter had a decided advantage in educational opportunity. The potential for offering programs in vocational and technical education was extremely high when one-fourth of those leaving school were entering an unskilled occupation the first year. Those in the unemployed classification would add to the above need for training.

One factor that seemed extraordinary was related to the stability of employment and job satisfaction. Over one-third of both sexes had been employed on only one job. Not quite as many on two jobs and a lesser number on three. More than half of the females and 35 percent of the males were completely satisfied with their present job. There appeared to be some degree of relationship between education and job satisfaction, with more education, a greater amount of satisfaction was indicated. The respondents were not making full use of the public employment service and school referral, as methods for obtaining their present job. They could profit by taking greater advantage of these services. One-fourth of the respondents had applied directly to their employer.

Over one-fourth of the males had been on active military duty. Their responses indicated that 65 percent had received training for a vocation while in the military service. This group in their responses and comments, expressed a high regard for the value of vocational and technical training.

The ninth grade enrollment lists for 1952-53 included 88 high schools in the 12 counties. There were only 67 schools by 1961, or about one-fourth fewer schools. This had been the result of the reorganization of school districts. The greatest amount of reorganization occurred in Howard County where the number of schools was reduced from six to two and in Mitchell county from six schools to three.

The holding power of the schools in the sample was above the state and national average. The drop-out rate for grades nine through twelve

was only 8.2 percent as compared to 19.6 percent in the Van Dyke and Hoyt study (31). The national figures on drop-outs released by the U. S. Office of Education (22), reported about two-thirds of the students who enter ninth grade remain in school through high school graduation. The drop-outs, in the preceding study, were reluctant to supply information concerning reasons for leaving school. Their answers covered up the real reasons in order to show themselves in a better light. Many times the drop-outs were unaware of the fundamental reason. In the present study, more than one-half of the males reported a dislike for school, while the females gave marriage as the main reason for leaving school. These and other reasons point out two important items for consideration. The drop-outs indicated they had received little or not counseling, and no subjects of interest were available to attract them.

A section of the study that should prove of interest to many educations dealt with the value ratings of each of the high school courses. Considering only the five courses rated highest, the males ranked mathematics first, English second, science third, drivers education fourth, and industrial arts fifth. The females rated English highest, bookkeeping second, mathematics third, sociology and psychology fourth and drivers education fifth. The selection of mathematics, English and science in the top positions came as no surprise, in view of the present emphasis on college preparatory and defense programs. The selection of drivers education in the top five on both lists should prove interesting to those who have questioned the advisability of offering this course. Industrial arts was ranked in the top five by

the males and should be considered carefully. Industrial arts should provide exploratory courses at the junior high level so that students can better choose high school courses that best fit their talents and abilities. These courses develop additional skill and lead to vocational choices. Industrial arts courses offer sound beginning programs on which vocational and technical courses can build.

The value of the fifteen courses were rated by the various occupational groupings in terms of their present occupation. The manager, clerical and sales groups in both sexes rated mathematics highest. Male and female college students rated English highest. The female professional group and the male college students rated science highest. Male college students and female homemakers rated drivers education highest. The farmers, followed by the skilled, semi-skilled and unskilled rated industrial arts highest. Foreign language was rated relatively low by most of the respondents except the college students. This was surprising unless the small number of respondents accounted for the low rating.

One of the most important points emphasized by this study was the importance of guidance and counseling services. The majority of the respondents felt that this phase of their high school experiences had been inadequate. Drop-outs needing these services most, felt that they had received little or no help. The success of vocational technical programs, when they become available, will depend almost entirely upon the information being supplied to the student to make a vocational choice, the determination of interest, aptitude and whether he or she can profit

by taking the course. In other words the methods used for the selection of students for entrance into training will be one of the most important phases of the program. This area should be studied further.

The vocational courses taken in high school were reviewed, keeping in mind what the respondents did the first year following high school and in terms of their present occupation. Business education had been taken by 17.8 percent of the males and 40.2 percent of the females. The males had taken fewer semesters then the females. In view of the number of respondents who were working in occupations requiring this background of training, and who would have taken courses had they been offered, the programs should be expanded at least a third. Apparently the courses were not available in all schools. The distributive education course had a very limited enrollment, but eleven percent of the respondents expressed interest in taking the course, therefore expansion of the program should be considered. Vocational agriculture had been taken by almost 35 percent of the males, the highest amount of vocational training for the males. There was interest expressed for taking the course by some respondents who attended schools where vocational agriculture was not offered. Migration and changes in technology has also affected agriculture. Current research has been underway to determine the changes needed in the high school curriculum to keep pace with these changes. Recommendations have been considered to combine the vocational agriculture courses offering at two or more schools and employ two instructors trained as specialists (i.e. agronomy and animal husbandry). The need for offering additional adult programs should be studied. Vocational home

economics had been taken by 72 percent of the females and appeared to be meeting the needs of those desiring it.

The programs offered and taken in vocational trade and industrial courses were very limited during the period covered by the survey. Charles City offered courses in cabinetmaking and millwork; machine shop; and a cooperative training program. Mason City offered the cooperative training program. The vocational trade and industrial courses that respondents would have taken had they been offered in high school were listed as follows in descending order: auto mechanics, electricity, welding, drafting, sheet metal, machine shop, printing, and cooperative training program. This information should be very helpful to aid in planning for the establishment of vocational courses in high school. The local employment opportunities should be considered and also opportunities within the state. This should not be too restrictive a factor as the younger people move to seek employment if they have the proper training.

The respondents expressed their desire for technical training during high school, if it had been offered, and as post-high school courses if offered now. Preferences for the courses were practically in the same order in both situations. The post-high school interest expressed by the respondents had been reduced from five percent for the lower end of the list to 10 percent for the most popular courses. Among the first six most popular technical courses in both lists were: electrical, civil (construction), diesel, mechanical, electronics and aviation. Adults preferred evening programs as the best time for taking

vocational and technical courses.

The participation expected in vocational-technical programs was tabulated after the respondents had indicated their desire to enroll in a technical, trade or vocational program if it had been offered under various alternative conditions. Seventy percent of all the respondents who answered this question, expressed interest for programs if offered at the high school attended and almost as many if the programs were offered at a nearby center for one-half days with transportation furnished. The popularity dropped about one-half for full time attendance at a center 30-60 miles with tuition paid. When all costs were to be paid by the students the responses indicated less participation could be expected.

Almost 57 percent of the respondents indicated a desire to enroll in post-high school courses in vocational-technical training at a center within commuting distance. Under the same conditions, when all costs were to be paid by the student, the affirmative responses were reduced about one-half. The interest for vocational-technical training was very high considering the fact that all respondents had been given an opportunity to reply and this included the college students and all the occupational groups.

Two studies have recently been reported, one dealt with the occupational plans of Iowa farm boys in twelfth grade and the other dealt with the educational and vocational plans of eleventh and twelfth grade students. Both of these studies were thorough in their approach to reporting occupational plans or aspirations. These were of interest for

comparison with the present study since the out of school respondents had made a vocational choice as reported under present occupation. The distribution of the nonfarm occupational plans of farm boys mentioned in the first study, reported nearly 43 percent of the group were planning a career in one of the professions such as law, medicine, engineering or teaching. These aspirations seem to be rather high when only about 10 percent were reported by the U. S. Department of Labor as working in the professional and technical occupational group. The present occupation of the respondents from the 12 county area agreed with the national occupational distribution best for the 1952-53 year, because they have been out of school for five years. The other years studied were relatively low in the professional and mangers occupational groups because of the large number of students still in college and the age of the respondents.

This study was designed as a follow-up study of former student both drop-outs and graduates for the three different years studied. The respondents were asked to express their opinions, needs and interests concerning several phases of their high school work. They were also asked to express their interests in vocational-technical programs. This pilot study should be very valuable to educators in the areas surveyed because the needs and interests for vocational and technical programs for both high school and adults were recorded in the findings. It should also be useful to others for planning future surveys or for planning vocational-technical programs.

Recommendations for further study:

1. Investigate the employment opportunities within the 12 county area and state.

2. Examine the counseling and guidance services needed by high school students and the selection methods for entrance into vocational-technical programs.

3. Conduct a detailed study of the drop-outs.

4. Make a further study of vocational curriculum and technical curriculum.

5. Study the best procedure for offering vocational-technical training in high school.

    a. Comprehensive high school
    b. Area high schools
    c. Cooperative programs in vocational trade and industrial education
    d. Limited offering of vocational courses at selected schools

6. Study of methods for offering vocational-technical programs to adults on a post-high school level.

    a. Technical institutes
    b. Technical and vocational courses offered at junior colleges
    c. Area schools for vocational-technical training
    d. Courses offered in the evening at comprehensive high schools with limited offerings

SUMMARY

The primary purpose of this study was to serve as a pilot study to determine the need for an interest in vocational-technical education. Additional objectives were: to explore the extent to which students would be willing to participate in area vocational programs; to obtain current opinions from former students concerning the adequacy of their high school program; to determine the preparatory vocational programs needed in secondary schools and the technical training needed by high school graduates; to gather data on drop-outs and determine their need and desire for training; to determine post-high school educational needs of adults; to classify respondent's present occupation and study employment and migration.

The ninth grade enrollment lists for the school years 1952-53, 1954-55 and 1956-57, were used to select the sample. The students who had completed their high school education were out of school for five, three and one years. From a population of approximately 10,000 questionnaires were mailed to a sample of 2440 former students in 12 north Iowa counties from 88 schools. Questionnaires were returned by 1836 persons for a response of 75 percent.

General Characteristics

The respondents consisted of 51 percent (932) males and 49 percent (904) females and were almost equally divided in each of the three years studied. The respondent's ages ranged from 18 to 24 years. At the time of the survey, 28 percent of the males and 48 percent of the females were married.

Residence

The place of residence during high school, of the former students was considered. These students were designated nonfarm and farm reared, depending on their place of residence for the entire four years of high school. The distribution in each classification by sex was as follows: nonfarm males (425) or 45.6 percent and farm reared males (454) or 48.7 percent; nonfarm females (437) or 48.4 percent and farm reared females (424) or 46.9 percent; part time combinations were excluded when residence comparisons were made. The farm reared respondents were then classified on the farming status (owner or renter) of their parent.

The distribution on farming status of parents was approximately one renter for every two owners.

Migration

When migration was studied, 52 percent of the males were still living in the same county while only 37 percent of the females remained. Considering all respondents, 44.8 percent remained in the county, 33 percent were still in the state, but 22.2 percent had moved out of the state.

The reasons given by respondents for leaving their home county were as follows: 25 percent left to continue their education, 23 percent of the females listed marriage, 15 percent of the males checked military service and other reasons given for moving included higher pay and desired kind or type of work or jobs were unavailable.

Employment

The methods respondents used to obtain their present job were as follows: 25 percent applied directly to employer, 14 percent were self-employed, relatives or friends helped nine percent, eight percent were in military service, school referral accounted for 3.2 percent and public service a similar amount, 2.8 percent continued from part time employment, and others mentioned included a fee-charging agency, newspaper advertisement, advancement, teacher placement, and civil service tests.

One-third of the respondents indicated their employment had all been within the home county. Of those employed, 31 percent were employed near their place of residence and slightly over one-fourth drive ten miles or less to work. The respondents employment had been fairly stable, slightly over one-third of both sexes had been employed in only one job. Twenty-seven percent had held two jobs, a greater number of this group being males than females. Those who had three job changes included 17.5 percent of the respondents. The length of employment of respondents expressed in total months was recorded as follows: 20 percent had worked less than 10 months, 21 percent 10-19 months, 11.6 percent 20-29 months, 12.5 percent 30-39 months, 5.9 percent 40-49 months, 5.9 percent 50-59 months and four percent 60-69 months.

The median weekly take home pay computed for the males was $56.15 and for females $47.30. The degree of job satisfaction was expressed as follows: for the females 52 percent were completely satisfied and 34 percent partially satisfied; for the males 35 percent were completely satisified and over 40 percent were partially satisfied.

Military service

More than one-fourth of the males sampled had been in the military service. Their length of service varied from six months to four years. Sixty-five percent indicated they had acquired training for a vocation in the service.

High School

Class size

The class size for those who completed their high school education, represented the size of the graduating class. The mode was in the interval 26-50 students followed closely by intervals 25 or under and 51-75 students.

Drop-outs

The greatest number of drop-outs occurred following completion of the eleventh grade, followed closely by those completing the tenth grade. The sample was composed of 8.2 percent drop-outs and 91.8 percent high school graduates. The two main reasons drop-outs gave for leaving school were: for the males, did not like school and the females, marriage.

High School Courses

The respondents by sex, who had taken at least one semester of each of the courses listed, were used in the computation of median value ratings and median semesters enrolled in each course. Medians were also computed using the same method except by occupational groupings. Considering the three courses rated highest, the males ranked mathematics first, English second and science third and the females ranked English first, bookkeeping second and mathematics third.

Vocational Counseling

The guidance and counseling services as they appeared to exist at the time of the survey were very inadequate, as reported by former students. Responses indicated that 40 percent felt that an opportunity was provided in high school to make an adequate study of vocations but 58 percent felt they were not given an opportunity. More than 72 percent of the male drop-outs replied they were not provided an opportunity to study vocations. Considering the question pertaining to the availability of a person trained in guidance and counseling to assist them in making a vocational choice, 55 percent of the former students responded negatively. The ninth grade was selected by one-fourth of the respondents as the earliest grade in high school in which students were given guidance and counseling to assist them in making a vocational choice; however, 42 percent replied that none was given. Slightly over one-fourth of the respondents indicated they are now working in a vocation chosen in high school.

First Year after Leaving High School

The respondent's responses as to what they did the first year after school were as follows: approximately 41 percent of the males and 48 percent of the females continued their formal education; one-fourth of the respondents were employed in an unskilled occupation, slightly over 13 percent of the males entered farming, almost 18 percent of the males entered military service, 12 percent of the females became full-time homemakers and an additional seven percent, combined homemaking with employment, over two percent of the respondents were unemployed.

An analysis of nonfarm versus farm reared males revealed almost 35 percent of the farm reared and 50 percent of the nonfarm reared males continued their formal education beyond high school. When only the farm reared males were considered on the basis of parent farming status, those reporting

continued formal education were 38.4 percent owner and 27.5 percent renter. Those employed in an unskilled occupation were distributed 18 percent of the farm reared and 53.5 percent of the nonfarm females continued their formal education beyond high school.

Present Occupation

A detail listing of the present occupation of respondents by census classification was presented. This list was then summarized using major census occupational groupings by sex, years studied and total. The percent of respondents in each of the occupational groups was distributed as follows: professional 9.0 percent, farmers 6.4 percent, managers 1.1 percent, clerical 13.6 percent, sales 1.9 percent, craftsman 4.5 percent, operatives 5.2 percent, service 3.1 percent, farm laborers 0.5 percent, laborers 4.5 percent, unemployed 0.8 percent, military service 9.4 percent, college and trade school students 24.7 percent and homemaking 15.3 percent.

Vocational Courses

The respondents selected the vocational courses they would have taken had the courses been offered in high school. From the total samples, those who indicated they would have taken business education were divided: 9.4 percent males and 15.2 percent females. Those who would have taken distributive education were divided: 13.3 percent male and 8.5 percent female. Of the male respondents, 5.8 percent indicated they would have taken vocational agriculture had it been available. Responses for the female respondents indicated that 6.2 percent would have taken home economics.

Vocational trade and industrial courses high school students would have taken had they been offered in high school were considered one at a time and the interest indicated by the male respondents in descending order was as follows: auto mechanics 66.6 percent, electricity 62.4 percent, welding 61.5 percent, drafting 46 percent, sheet metal 34 percent, machine shop 16.5 percent, printing 13.3 percent, cooperative program 13.1 percent, and cabinet making and millwork 9.1 percent. The responses of the females indicated the selection of printing by 14.9 percent, with lesser amounts reported for the other courses.

The vocational courses taken in high school and the number of semesters enrolled in each course were reported for the male respondents. Business education had been taken by 17.8 percent (166) but most of them had only taken one or two semesters. Distributive education had been taken by 3.1 percent (29) of the males and only for one or two semesters. The extensiveness of the vocational agriculture program was indicated by 34.7 percent (323) of the males reporting they had taken this course. The programs offered and taken in vocational trade and industrial courses were very limited during the period covered by the survey.

The frequency distribution of the females indicating the vocational courses taken in high school and the number of semesters enrolled were reported. Business education was taken by 40.2 percent (363) of the female respondents. The number of semesters taken ranged from one to eight semesters. Distributive education has been taken by six percent (54) of the females. Vocational home economics had been taken by 72 percent (652) of the female respondents and most of them had completed three to four semesters.

Vocational courses that male adults would take now were mutually exclusive and reported in descending order as follows: auto mechanics 14.2 percent, electricity 8.4 percent, welding 7.5 percent, drafting 6.6 percent, machine shop 2.9 percent, vocational business education 2.2 percent, vocational agriculture 1.7 percent, printing 1.7 percent, cabinet making one percent, the remaining courses were less than one percent, sheet metal, vocational distributive education, interior decorating, trade and industrial cooperative. Evening programs were preferred by most of the adults who indicated a desire to take vocational courses.

Technical Courses

The technical courses former male students would have taken during high school, if offered, were considered independently and the interest expressed recorded in descending order as follows: electrical 40.9 percent, civil construction 40.9 percent, diesel 39.1 percent, mechanical 33.2 percent, electronics 31.0 percent, aviation 30.9 percent, industrial 20.5 percent, instrumentation 18.5 percent, air conditioning and heating 18.1 percent, chemical 17.8 percent, and metallurgical 14.9 percent. The female respondents expressed interest as follows: chemical 11 percent, industrial 6.6 percent, civil 2.5 percent, electrical 2.1 percent and several others by less than two percent each.

The technical courses male adults would take now if offered as a two year post-high school course were considered individually and selected in the following descending order: electrical 30.3 percent, diesel 30 percent, civil 26.1 percent, electronics 23.3 percent, mechanical 23.2 percent, aviation 18.2 percent, industrial 14.7 percent, instrumentation 13.6 percent, air conditioning and heating 13.6 percent, chemical 11.1 percent and metallurgical 10.6 percent. The female respondents selected the courses in descending order as follows: chemical 5.6 percent, industrial 5.1 percent, civil 2.2 percent and several others by less than two percent each.

Participation expected in Vocational-Technical Programs

The respondents indicated their desire to enroll in a technical, trade or vocational training program, if it had been offered under various alternative conditions. The conditions and the percent, "yes" responses were as follows: at the high school attended 70 percent; at a nearby center for one-half days, transportation furnished 63.8 percent; at a center 30-60 miles, full time, tuition paid, other costs paid by student 44.9 percent, and at a center 30-60 miles, full time all costs paid by the student 11.7 percent.

The respondents indicated their desire to enroll in post-high school courses in technical, trade or vocational training for a period of one-half to two years at a center within 30-60 miles of their home under two conditions. The conditions and the percent, "yes" responses were as follows: tuition paid by the school district, and other costs paid by the students 57 percent; and all costs paid by the student 28.2 percent.

BIBLIOGRAPHY

1. American Society for Engineering Education. Technical Institute Division. The engineering technician. Author. New York, N. Y. (ca. 1958).

2. Bell, Howard M. Youth tell their story. American Council on Education. Washington, D. C. 1938.

3. Brandon, George L. Twin city technicians. College of Education. Michigan State University. East Lansing, Michigan. 1958.

4. Carlson, Theordora E. and Williams, Catherine P. Guide to the National Defense Education Act of 1958. Office of Education. U. S. Department of Health, Education, and Welfare.

5. Cochran, William G. Sampling techniques. John Wiley and Sons, Inc. New York, N. Y. 1953.

6. Conant, James B. The American high school today. McGraw-Hill Book Co., Inc. New York, N. Y. 1959.

7. _____. Slums and suburbs. McGraw-Hill Book Co., Inc. New York, N. Y. 1961.

8. Flesher, W. R., Flesher, Marie A., Reese, Robert M., and other members of the Survey Staff. Public vocational-technical education in Oregon. School Survey Service, Ohio State University. Columbus, Ohio. 1958.

9. Gibson, Raymond C. Resources and needs for higher education in Iowa. Manpower problems and higher education in Iowa a new alliance. Iowa Legislative Research Bureau. State House, Des Moines, Iowa. 1959.

10. Good, Carter V. Dictionary of Education. 2nd ed. McGraw-Hill Book Co., Inc. New York, N. Y. 1959.

11. _____. Introduction of educational research. Appleton-Century-Crofts, Inc. New York, N. Y. 1959.

12. Hand, Harold C. Principle findings of the analysis of programs completed study. Illinois, Office of the Superintendent of Public Instruction. Springfield, Illinois. 1960.

13. Ingle, Marvin William. A survey of educational and vocational plans of eleventh and twelfth-grade students in proposed intermediate unit #27 of Iowa and their implications for higher education. Unpublished Ed. D. Dissertation. Library. University of Missouri. Columbia, Missouri. 1962

14. Iowa State Department of Public Instruction. Education beyond high school age; the community college. Author. Des Moines, Iowa. 1962.

15. Iowa State Department of Public Instruction. Survey shows 46.9 percent of the 1960 graduates from Iowa public four-year high school continue their education. Author. (Mimeographed) Des Moines, Iowa. 1961.

16. Jacoby, Robert. Trade and technical surveys; techniques, forms, procedures. Trade and Industrial Division, Pennsylvania, Department of Public Instruction. Harrisburg, Pennsylvania. 1960.

17. Kaldor, Donald R., Eldridge, Eber, Burchinal, Lee G. and Arthur, I. W. Occupational plans of Iowa farm boys. Iowa Agr. and Home Ec. Expt. Sta. Res. Bul. 508. 1962.

18. Larson, Milton E. and O'Loughlin, Simon T. A follow-up study of selected graduates of Dunwoody Industrial Institute. (Unpublished Mimeographed Master's paper) University of Minnesota. Department of Industrial Education. Research Report 8: 1-6. 1956.

19. McLure, William P., Mann, George C., Hamlin, Herbert M., Karnes, Ray M. and Miller, Van P. Vocational and technical education in Illinois; tomorrow's challenge. Bureau of Educational Research, College of Education, University of Illinois. Urbana, Illinois. 1960.

20. National Association of Manufacturers. Advisory Committee on your opportunities in industry as a technician. Your opportunities in industry as a technician. Author. New York, N. Y. 1957.

21. National Education Association of the United States. Department Rural Education. Yearbook, 1958-1959. c1959.

22. National Education Association of the United States. Research Division. Research Memo No. 1961-36. 1961.

23. Payne, Stanley L. The art of asking questions. Princeton University Press. Princeton, New Jersey. 1951.

24. Rutgers University. Graduate School of Education. Division of Field Studies and Research. Vocationally talented pupils. Author. New Brunswick, New Jersey. 1962.

25. Snedecor, George W. Statistical methods; applied to experiments in agriculture and biology. 5th ed. Iowa State College Press. Ames, Iowa. 1956.

26. United States Census Bureau. 1960. Population, Series P C. (1), 17B, Iowa. 1961.

27. United States Department of Health, Education, and Welfare. Office of Education. Education for a changing world of work: report of the panel of consultants on vocational education. O. E. Pub. No. 30020. 1962.

28. United States Department of Labor. Bureau of Labor Statistics. Occupational outlook handbook. 1961 ed. United States Department of Labor. Bureau of Labor Statistics. Bulletin No. 1300. 1961.

29. United States Department of Labor. Bureau of Labor Statistics. School and early employment experiences of youth. United States Department of Labor. Bureau of Labor Statistics. Bulletin No. 1277. 1960.

30. United States Department of Labor. Manpower challenge of the 1960's Author. Washington, D. C. 1960.

31. Van Dyke, L. A. and Hoyt, K. B. The drop-out problem in Iowa high schools. College of Education, State University of Iowa. Iowa City. 1958.

32. Wakely, Ray E. and Russell, Amy. Migration and changes of population in Iowa, 1960. Iowa. Agr. and Home Ec. Expt. Sta. Ames, Iowa 1962.

33. Wert, J. E., Neidt, C. O., and Ahmann, J. S. Statistical methods; in educational and psychological research. Appleton-Century-Crofts, Inc. New York, N. Y. 1954.

34. Wood, Herbert S. A study of technical education in California. Bulletin 28, No. 7: 1-122. September, 1959.